

SOLUTIONS FOR

# Wind Energy



## FORWARD ROTATION

# The Power of Partnership

As the wind industry has grown, so has Hubbell's involvement. Today, we supply products and services that span the entire scope (turbine, tower, collector system, substation and transmission) of the wind industry. As a result of our global reach, we can offer product solutions and value-added services that are unparalleled in the industry. We have been, and continue to be, focused on providing solutions to the most challenging renewable application requirements.



Product	Hubbell	Competitor 1	Competitor 2	Competitor 3	Competitor 4
Elbows	●	●	●		
Splices	●	●	●		
Arresters	●	●	●		
Junction Boxes and Box Pads	●			●	●
Compression Lugs	●		●		
Shear Bolt Connectors	●	●	●		
Battery Tools (Crimping & Cutting)	●				
Wire Management	●	●	●		
Mechanical Grounding	●				
Exothermic Grounding	●				
Compression Grounding	●				
Hardware	●		●		
Cold Shrink	●	●	●		
Termination Covers	●	●	●		

Strength, performance, quality, and outstanding customer service characterize all **Hubbell** enclosure and cable accessory products. Renewable energy applications such as wind power have unique challenges and requirements, so Hubbell is proud to offer a wide selection of enclosures and equipment foundation products. In addition to our core products and options, Hubbell can customize a solution for your project and application.



**BURNDY** has a reputation for being a leader in innovation in engineering and manufacturing high quality compression connectors, grounding products, and installation tooling. Today, BURNDY® brings this rich tradition of product innovation to the renewable energy industry.



**Hubbell Power Systems, Inc. (HPS)** manufactures a wide variety of distribution, OEM and telecommunications products used by utilities. In addition, HPS products are used in the residential construction, transportation, gas,



and water industries. Products include construction and switching products, tools, insulators, arresters, pole line hardware, cable accessories, test equipment, transformer bushings and polymer precast enclosures and equipment pads.

The **Quazite**® brand was established in 1982 and acquired by Hubbell Power Systems, Inc. in 2006. Today, we manufacture a variety of polymer concrete enclosures for the electric utility, communications, C&I, and water markets to provide safe, durable and cost effective housing for utility systems equipment. Quazite products are tested to meet ANSI/SCTE specifications for underground enclosure integrity and are manufactured in Lenoir City, Tennessee.



Polymer concrete is made from selectively-graded aggregates in combination with a polymer resin system. When combined through a process of mixing, molding and curing, an extremely powerful cross-linked bond is formed. Precast polymer concrete is reinforced with fiberglass for exceptional strength and rigidity.



## FORWARD ROTATION

# Wind Collection System



### 1 MEDIUM & LARGE COMPRESSION TERMINALS & SPLICES

BURNDY® HYDENT™ uninsulated copper and aluminum compression terminals and splices for all sizes and applications



### 2 GROUNDING SOLUTIONS

BURNDY manufactures Compression, Mechanical, and Exothermic grounding connectors for virtually all grounding applications



### 3 COLD SHRINK

BURNDY offers a full line of both black and clear cold shrink products to insulate our terminal lugs and splice products to provide a 100% BURNDY Engineered Connection



### 4 COVERS FOR TRANSFORMER CONNECTORS

BURNDY manufactures a variety of secondary terminal covers for the wind industry. These plastisol covers have a dielectric strength of 240 volts per mil and rated at 105°C



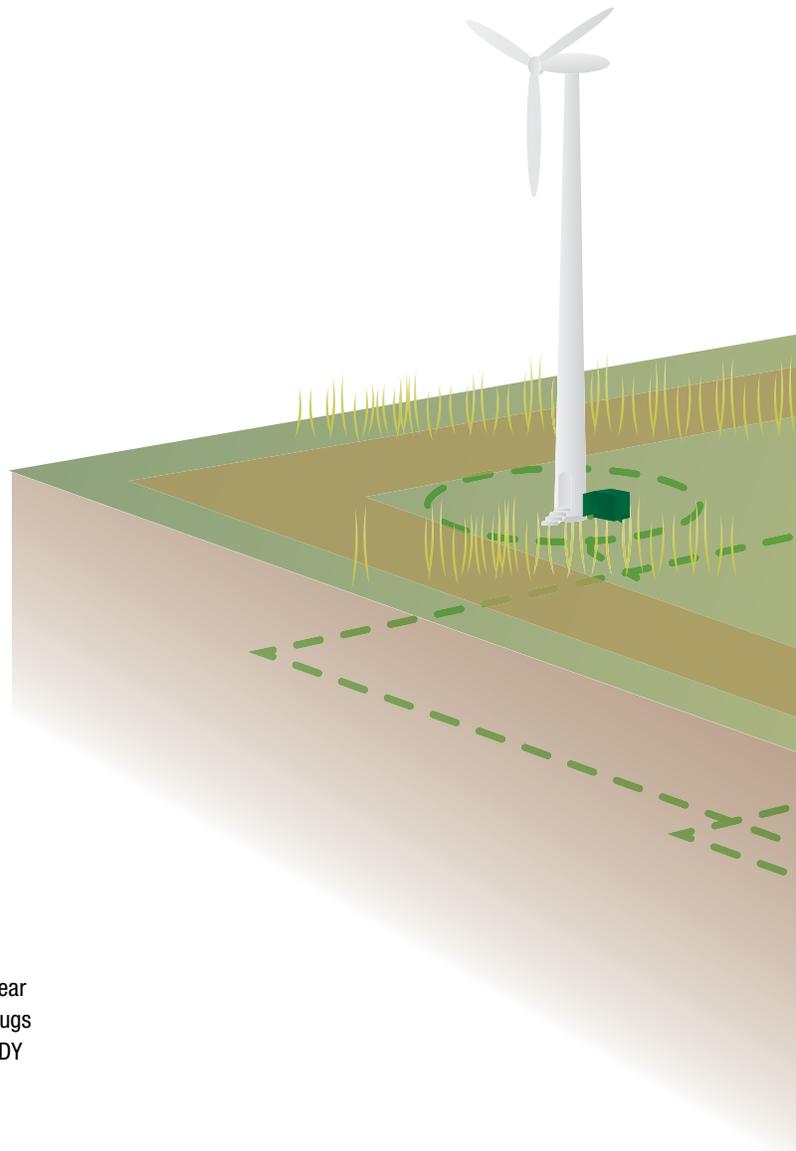
### 5 GROUNDS STUDS

Type GSC ground ball studs, available with an optional cover, are perfect for protection when servicing pad mounted transformers



### 6 WIRE MANAGEMENT PRODUCTS

BURNDY offers a full line of wire management products which include nylon ties, industrial grade SS barbed ties, SS ties, and PVC coated ties to meet all of your wind industry needs



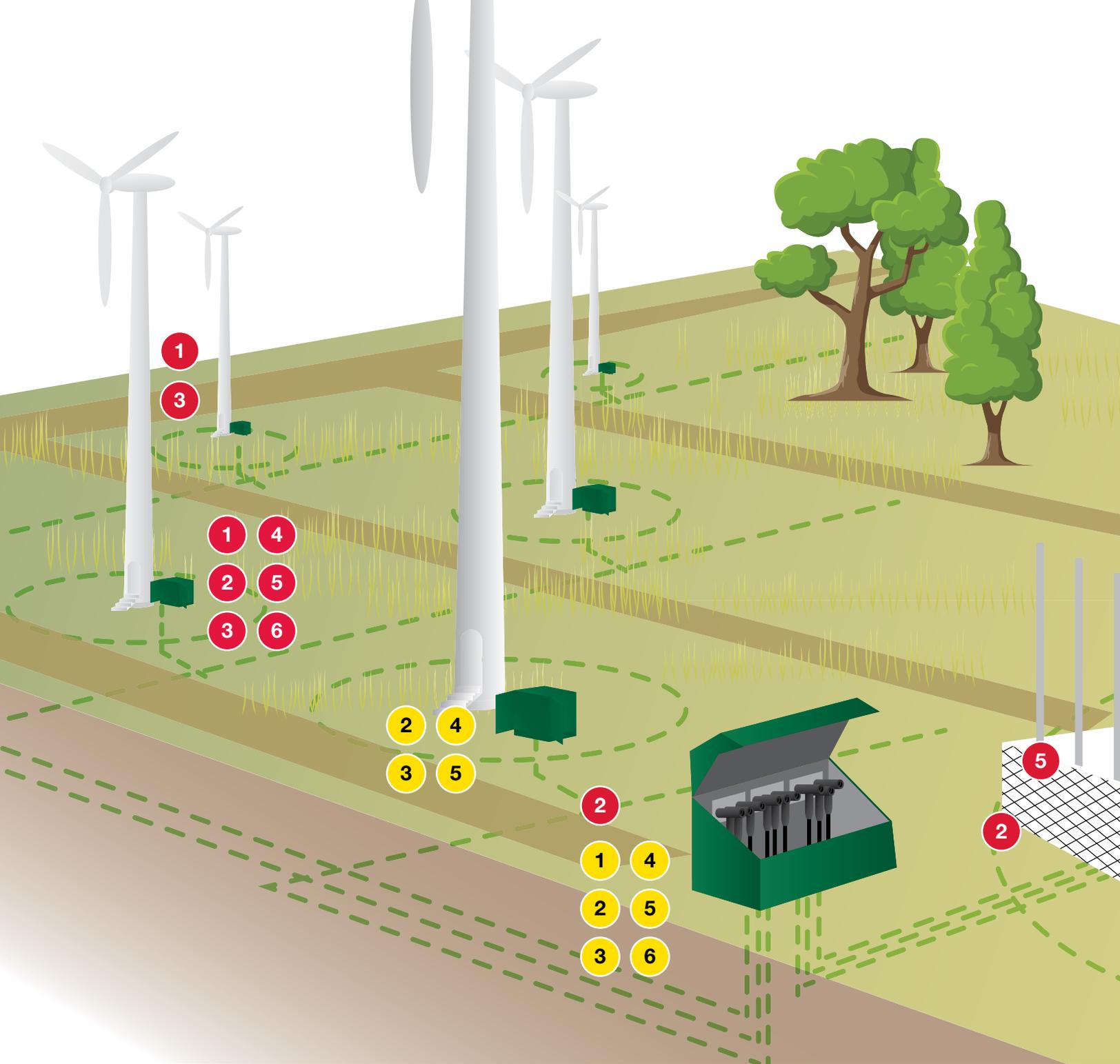
### 1 ELBOW ARRESTERS

Limits over voltages to acceptable levels, protecting equipment and extending service life



### 2 PRIMARY PEDESTALS (SECTIONALIZING CABINETS)

Full line of fiberglass and steel sectionalizing enclosures



**3 BOX PADS & GROUND SLEEVES**

Hubbell box pads and ground sleeves provide a means to securely anchor and support the weight of pad-mounted electrical equipment



**5 T-BODIES/ELBOWS**

Full line of 35kV 600 Amp cable accessories, Mates to IEEE Std. 386 Interface 13, is 200kV BIL rated and can be installed on conductors ranging from #2AWG to 1250 kcmil



**4 CABLE VAULTS & PADS**

Hubbell cable vaults and pads are a two-piece system designed to work with pad-mounted switchgear or transformers



**6 ACCESSORIES**

- Reducing tap plugs
- Bushing extenders
- Insulating caps
- Shear bolt connectors
- Cold shrink seal kits



**ON SOLID GROUND**

# Three Grounding Solutions

**We introduced the first mechanical connector, the first network underground system and the first compression grounding system, just to name a few.** No matter the option you choose, you'll know you're getting quality products that meet and exceed industry standard performance guidelines, in all conditions. BURNDY has an American-made solution for virtually every grounding application.

## **HYGROUND® COMPRESSION**

- BURNDY® HYGROUND® is the safest, most cost-effective, time-efficient and easily inspected grounding system available today. A BURNDY HYGROUND compression connection can be made in three minutes.
- The efficiency and consistency of installing a BURNDY HYGROUND compression grid translates to tremendous labor savings.



**BURNDY HYGROUND helps you keep your entire jobsite on schedule. Compression connections can be made in even the most inclement weather conditions— rain, wind or snow.**



## MECHANICAL

Our easy-to-install mechanical grounding products are known for their quality and durability in even the most extreme conditions.



Manufactured from a high copper alloy, **BURNDY® connectors are designed to last for the life of an electrical grounding system— 40 years or more.**

## thermOweld® EXOTHERMIC

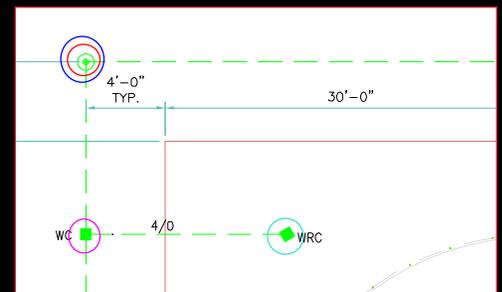
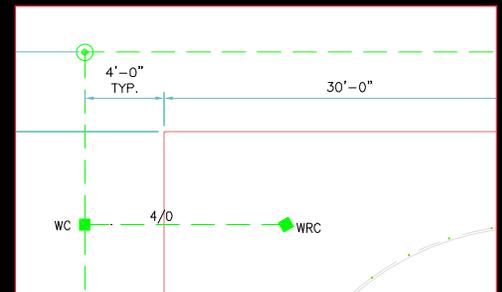
The industry-leading line of exothermic grounding products and accessories is well documented: the



safety of the contained, high-temperature reaction; the irreversible connection; the lack of loosening or corrosion at the weld site; and no need for an outside power source.

## FIELD SPECIFICATIONS

The BURNDY Grounding Take Off Team provides project take offs for everything from direct burial ground grid connections, power system grounding and steel infrastructure bonding requirements to static discharge and signal reference grid connections as well as complete design and estimation services for lightning protection systems and components.



Our unique Take Offs raise the bar on the level of detail.

## GROUND STUDS

Type GSC ground ball studs, available with an optional cover, are perfect for servicing pad mounted transformers. Shown is GSC632NH1B with optional thermoplastic elastomer cover GSC632NH1BCOVER1, featured with a 90° NEMA spaced pad and 1-inch ball stud.





**POWERING WIND**

# Superior Market Presence

**BURNDY leads the wind industry as a global manufacturer of specification grade and brand preferred products.**

## **MEDIUM & LARGE COMPRESSION TERMINALS & SPLICES**

**BURNDY® HYDENT™** uninsulated copper and aluminum compression terminals and splices are designed to provide a fast and easy installation. As part of the BURNDY® Engineered System, HYDENT™ connectors are marked with the wire size and type; die index; color coding; and the proper number and location of crimps. Once properly installed, the BURNDY® connector is embossed with the die number, making it easy to visually inspect. Other plating, tongue angles and narrow tongue widths are available. Contact BURNDY for information.



### **WHY USE SHEAR BOLTS? GO WITH THE BURNDY PAT444S SERIES DIELESS BATTERY TOOL!**

The BURNDY PAT444S requires only one (1) crimp on terminals and splices up to 750 kcmil and two (2) crimps on 1000 kcmil. **No dies necessary and the connection is UL Listed and provided a 5-year warranty. Connections using the PAT444S Series tools are quicker, less expensive, and provide an irreversible high quality connection to ensure it stands the test of time.** Contact your BURNDY Field Representative for a demonstration.

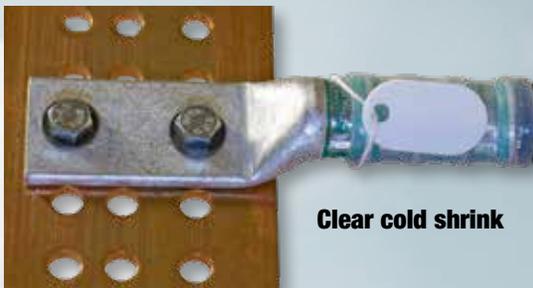
**Scan the QR code for a brief video about the BURNDY PAT444S**





**BURNDY OFFERS A FULL LINE OF BOTH BLACK AND CLEAR COLD SHRINK PRODUCTS.**

Our silicon rubber cold shrink tubing using ripcord technology saves labor and overhead costs while improving safety by eliminating the need for a heat gun or torch. Similar to our clear heat shrink, clear cold shrink tubing provides for visual inspection. These cold-applied splice sealing products offer excellent insulation and moisture proof sealing for in-line cable connector systems or elbow to cable jacket applications.



**Clear cold shrink**



**COVERS FOR TRANSFORMER CONNECTORS**

BURNDY manufactures a variety of covers for the wind industry. These plastisol covers have a dielectric strength of 240 volts per mil and rated at 105 degrees C. They meet or exceed ANSI C119.4 Class A specifications. BURNDY covers are available in a variety of colors and are multipurposed for use in a variety of applications covering mechanical and compression connectors.



## BURNDY® TOOLING

# Work Smart, Work Strong

At BURNDY, we work every day to provide superior crimping and cutting solutions for our customers. Our goal is to provide the most ergonomic products that allow you to perform your work safely and reliably in accordance with the highest conformance standards in the electrical industry.

### THE MARK OF EXCELLENCE

Our dies, connectors and tools, when used together, form a trusted UL Listed connection. We proudly back our UL Listing. We earned it by passing rigorous testing and evaluations that demonstrate compliance with nationally recognized safety standards. **Connections made with the BURNDY® Engineered System are backed with a 5-year warranty.** We stand behind our tools. BURNDY® tools are assembled and designed in the U.S. Our PATRIOT® line of battery tools also has a lifetime warranty on the INFINITY DRIVE® transmission.



The BURNDY® UL and CSA Certified Engineering Lab tests our products to many industry and customer standards including UL, CSA, ANSI, IEC, ASTM, IEEE, OSHA and ISO standards.

BURNDY provides comprehensive training on all of our tools and connector products to ensure that proper, inspectable crimps can be performed with confidence every time.

- **BURNDY® Engineered System Training (BEST) Program**

- Ask your BURNDY Field Representative about our installer training program
- Installers trained on proper techniques to ensure accurate connector-tool-die selection and installation
- Each installer provided with a dated card



## THE NEW PATRIOT® PAT750T3



**TRACK: MAP**  
LOCATION OF  
CRIMPS



**TRACE: RECORD**  
COMMENTS FOR  
EACH CRIMP



**TRANSMIT:**  
CONNECT TO  
MOBILE DEVICES

## BURNDY® TOOLING SOLUTIONS

- Battery actuated crimping and cutting tools with associated dies (Makita® battery platform)
- Self-contained hydraulic crimping and cutting tools
- Remote hydraulic crimping and cutting tools (i.e., pumps, hoses and heads)
- Low-pressure hydraulic tools (i.e., crimp tools, impact drills, saws, tampers and breakers)

## EASILY ACCESSED TOOL REPAIR

- Calibration and repair services for tools and dies
- Localized BURNDY® Tool Service Centers
- Technical application assistance
- Loaner tools





## HUBBELL ENCLOSURES

# Strength, Performance, Quality & Outstanding Customer Service

Renewable energy applications such as wind power have unique challenges and requirements, so Hubbell is proud to offer a wide selection of enclosures and equipment foundation products. In addition to our core products and options, Hubbell can customize a solution for your project and application.

### PRIMARY PEDESTALS (SECTIONALIZING CABINETS)

- Materials and manufacturing methods
  - Male vs female molded fiberglass
  - Metal
- Applicable standards and application
  - IEEE C57.12.28 & 12.29
  - One-piece integrated design

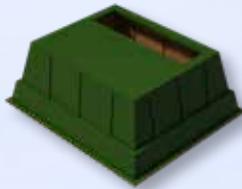
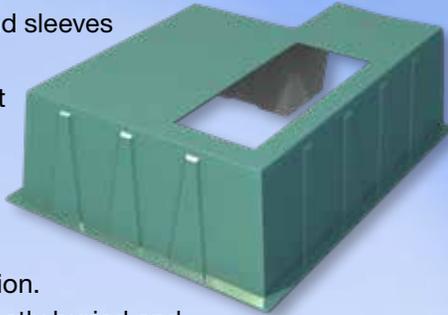


## BOX PADS & GROUND SLEEVES

Hubbell box pads and ground sleeves typically provide a means to securely anchor and support the weight of pad-mounted electrical equipment. The large, open interior also affords for additional cable looping and ease of installation.

They are designed to be directly buried and protect against frost heave where applicable. Hubbell provides a full line of box pads and ground sleeves utilizing different materials to meet your needs.

- NEUC load rated
- Smooth gel-coat or polymer concrete exterior for best equipment mating surface
- Materials of design include:
  - Quazite Polymer concrete
  - Hubbell FRP Fiberglass
  - Hubbell FRP Hard-top hybrid and pad-vault designs
- Load rated up to 16,000 lbs
  - Heavier designs upon request
- Seismic designs available
- Chuted wind farm specific designs



## CABLE VAULTS & PADS

Hubbell cable vaults and pads are a two-piece system designed to work with pad-mounted switchgear or transformers. They provide both a foundation for cabinet mounting as well as a ground sleeve for cable looping and protection. Derived from a corrugated fiberglass base and polymer concrete flat pad top, Hubbell cable vaults and pads are a lightweight alternative to pre-cast or pour-in-place concrete alternatives.

- Load rated per application
- Polymer materials won't rust or corrode
- Highly customizable



## HUBBELL OFFERS FULL-SERVICE CUSTOM KITTING

When you partner with Hubbell, your cabinets can arrive on the jobsite with the junctions, T-body kits, elbows, grounding connectors and accessories factory mounted and ready to go. Hubbell saves you money, time and hassles!



## HUBBELL CABLE ACCESSORIES

# Step It Up with the 35kV 600A Product Family

Wind farms normally step the voltage from each turbine up to 35kV, either at the generator inside the turbine or at a transformer at the base of the structure. To accommodate this growing need, Hubbell Power Systems provides a reliable line of cable accessories for underground cable construction and surge protection.

### T-BODY KITS

- Mates to IEEE Std. 386 Interface 13
- 200kV BIL rated
- Can be installed on conductors ranging from #2AWG to 1250 kcmil
- Fits on cables with insulation diameters from 0.750" to 2.145"



### JUNCTIONS

- Uses IEEE Std. 386 Interface 13
- 200kV BIL rated
- Available in 2, 3 or 4 positions
- Available with 4" or 6" centers
- Mountable with stainless steel bracket or U-straps



### 200A ELBOW ARRESTERS

Limits over voltages to acceptable levels, protecting equipment and extending service life. Note: HPS 35kV Elbow Arresters utilize IEEE 386 Interface 7B (200A, 35kV Small Interface) and the use of a reducing tap plug (635ETP) would be required for application.



## OTHER ACCESSORIES

### REDUCING TAP PLUGS

- Adds a 200A loadbreak interface to an existing 600A deadbreak T-body
- Interface used for testing, grounding or addition of arrester protection



### BUSHING EXTENDERS

- Provides an extended 600A 35kV Interface for use in a crowded cabinet



### INSULATING CAPS

- Provides a temporary or permanent cover for an energized operating interface



### SHEAR BOLT CONNECTORS

- No crimping tools or dies are required
- Hex head will shear off at the right torque every time
- Can be used on a wide range of conductor sizes
- Will work regardless of conductor type (solid, stranded, compact, etc.)
- Four connectors cover #2 AWG through 1250 kcmil sized conductors



### COLD SHRINK SEAL KITS

- Prevents moisture intrusion into cable jacket



## INSTALLATION TRAINING

Proper installation is vital in the performance and long-term reliability of our products. Outages and disruptions to the electrical system most often occur when a product has been installed incorrectly. Installation training from Hubbell experts can help prevent these costly disruptions. Our hands-on training gives your installers the skills necessary to increase network reliability and reduce cost of ownership. By partnering with Hubbell, we will train your electrical installation teams wherever and whenever you need it.

For more information  
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